

WHAT IS CLAIMED IS:

1. A nitride-based semiconductor element comprising:

a plurality of mask layers formed at a prescribed

5 interval to come into contact with the upper surface of an underlayer while partially exposing said underlayer; and

a nitride-based semiconductor layer, formed on the upper surface of said underlayer and said mask layers, consisting of a material different from that of said underlayer, wherein

the minimum distance between adjacent said mask layers is smaller than the width of an exposed part of said underlayer located between said adjacent mask layers.

15 2. The nitride-based semiconductor element according to claim 1, wherein

said underlayer includes a substrate, and

said mask layers are formed to be in contact with the upper surface of said substrate.

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3. The nitride-based semiconductor element according to claim 1, further comprising facets, formed on an exposed part of the upper surface of said underlayer located between said adjacent mask layers, having at least two types of different sizes.

4. The nitride-based semiconductor element according  
to claim 1, wherein

5       said nitride-based semiconductor layer is formed on  
the upper surface of said underlayer through a buffer  
layer.

10      5. The nitride-based semiconductor element according  
to claim 1, wherein

15      said nitride-based semiconductor layer is formed to  
be in contact with the upper surface of said underlayer.

20      6. The nitride-based semiconductor element according  
to claim 1, wherein

25      said mask layers have overhangs protruding above an  
exposed part of said underlayer.

30      7. The nitride-based semiconductor element according  
to claim 6, wherein

35      said mask layers are at least partially inverse-  
trapezoidal.

40      8. The nitride-based semiconductor element according  
to claim 1, wherein

45      25     said underlayer includes projection portions,

said projection portions are inverse-trapezoidal, and  
said mask layers are formed to be in contact with the  
upper surfaces of said inverse-trapezoidal convex portions.

5       9. The nitride-based semiconductor element according  
to claim 1, wherein

          said underlayer includes projection portions, and  
          said mask layers are formed to be in contact with the  
          upper surfaces of said projection portions so that side  
10      portions of said mask layers protrude from said projection  
          portions.

15      10. The nitride-based semiconductor element according  
to claim 1, wherein

          said mask layers include:  
          a first mask layer formed to be in contact with the  
          upper surface of said underlayer, and  
          a second mask layer, formed on said first mask layer,  
          consisting of a material harder to etch than said first  
20      mask layer.

25      11. The nitride-based semiconductor element according  
to claim 1, further comprising a nitride-based  
          semiconductor element layer, formed on said nitride-based  
          semiconductor layer, having an element region.

12. A method of forming a nitride-based semiconductor comprising steps of:

forming a plurality of mask layers at a prescribed  
5 interval to be in contact with the upper surface of an underlayer while partially exposing said underlayer; and

growing a nitride-based semiconductor layer consisting of a material different from that of said underlayer on the upper surface of said underlayer and  
10 said mask layers, wherein

the minimum distance between adjacent said mask layers is smaller than the width of an exposed part of said underlayer located between said adjacent mask layers.

15 13. The method of forming a nitride-based semiconductor according to claim 12, wherein  
said step of growing said nitride-based semiconductor layer includes a step of growing said nitride-based semiconductor layer on the upper surface of said  
20 underlayer through a buffer layer.

14. The method of forming a nitride-based semiconductor according to claim 12, wherein  
said step of growing said nitride-based semiconductor layer includes a step of growing said nitride-based  
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semiconductor layer to be in contact with the upper surface of said underlayer.

15. The method of forming a nitride-based  
5 semiconductor according to claim 12, wherein  
said mask layers have overhangs protruding above an exposed part of said underlayer.

16. The method of forming a nitride-based  
10 semiconductor according to claim 15, wherein  
said mask layers are at least partially inverse-trapezoidal.

17. The method of forming a nitride-based  
15 semiconductor according to claim 12, wherein  
said underlayer includes a substrate, and  
said mask layers are formed to be in contact with the upper surface of said substrate.

20 18. The method of forming a nitride-based  
semiconductor according to claim 12, wherein  
said underlayer includes projection portions,  
said projection portions are inverse-trapezoidal, and  
said mask layers are formed to be in contact with the  
25 upper surfaces of said inverse-trapezoidal projection

portions.

19. The method of forming a nitride-based  
semiconductor according to claim 12, wherein  
5       said underlayer includes projection portions, and  
          said mask layers are formed to be in contact with the  
upper surfaces of said projection portions so that side  
portions of said mask layers protrude from said projection  
portions.

10       20. The method of forming a nitride-based  
semiconductor according to claim 12, wherein  
          said step of forming said mask layers includes steps  
of:

15       forming a first mask layer to be in contact with the  
upper surface of said underlayer,  
          forming a second mask layer consisting of a material  
harder to etch than said first mask layer on said first  
mask layer, and  
20       forming an etching mask on a prescribed region of  
said second mask layer and thereafter etching said second  
mask layer and said first mask layer through said etching  
mask serving as a mask thereby forming overhanging mask  
layers.

21. The method of forming a nitride-based semiconductor according to claim 12, further comprising a step of growing a nitride-based semiconductor element layer having an element region on said nitride-based 5 semiconductor layer.

22. A method of forming a nitride-based semiconductor comprising steps of:

forming a plurality of mask layers at a prescribed 10 interval to be in contact with the upper surface of an underlayer while partially exposing said underlayer; and growing a nitride-based semiconductor layer 15 consisting of a material different from that of said underlayer on an exposed part of the upper surface of said underlayer located between adjacent said mask layers to have difference in growth rate.

23. The method of forming a nitride-based semiconductor according to claim 22, wherein 20 said step of growing said nitride-based semiconductor layer includes a step of growing facets having at least two types of different sizes on said exposed part of the upper surface of said underlayer located between said adjacent mask layers thereby growing said nitride-based 25 semiconductor layer.